Food safety issues and scientific advances related to animal-source foods in developing countries

International Livestock Research Institute

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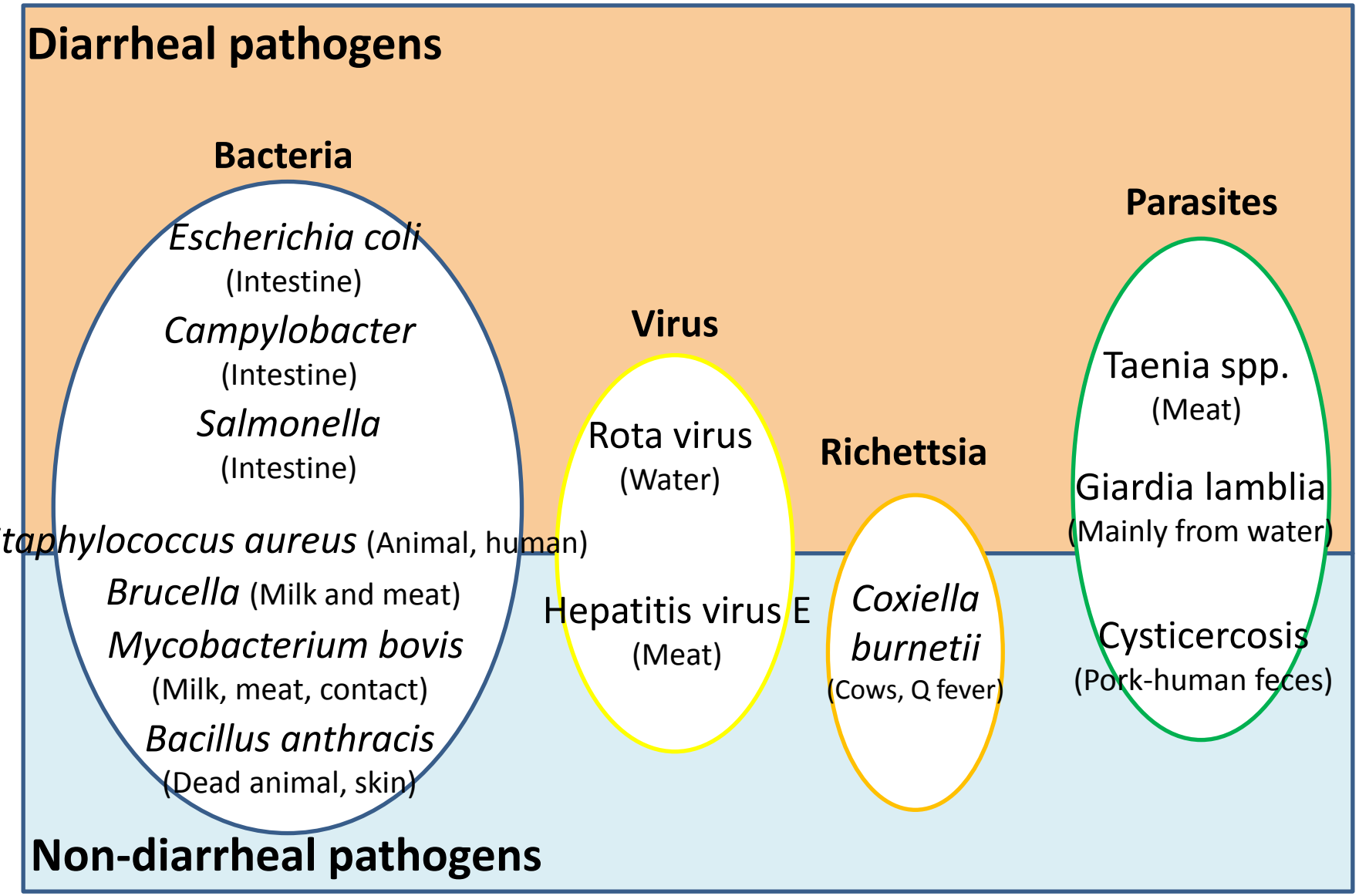
Food safety issues in developing countries

- Every year, at least 2 billion cases of diarrhea occur and 700,000 children under 5 years old die worldwide
- Animal-source foods provide nutrition, but are one of the main cause of food borne zoonoses (FBZs)
- FBZs include non-diarrheal disease such as tuberculosis and brucellosis

Food-borne zoonotic pathogens

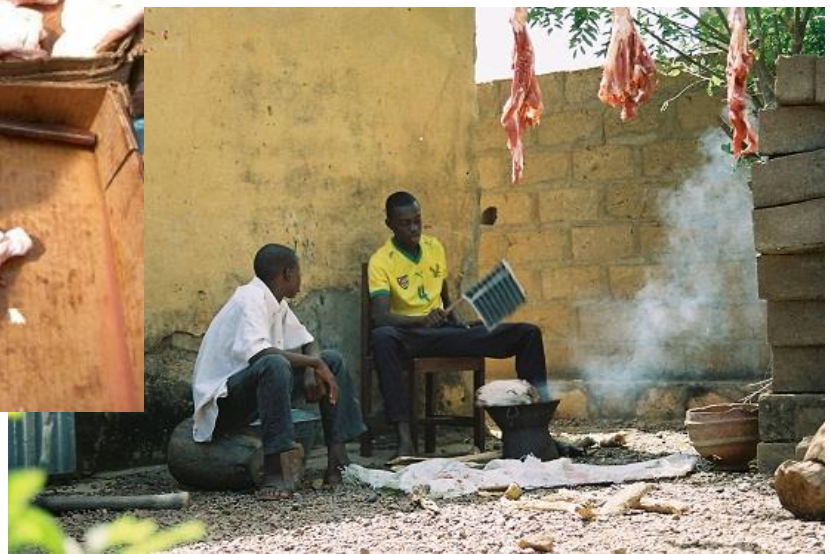
(Common ones)



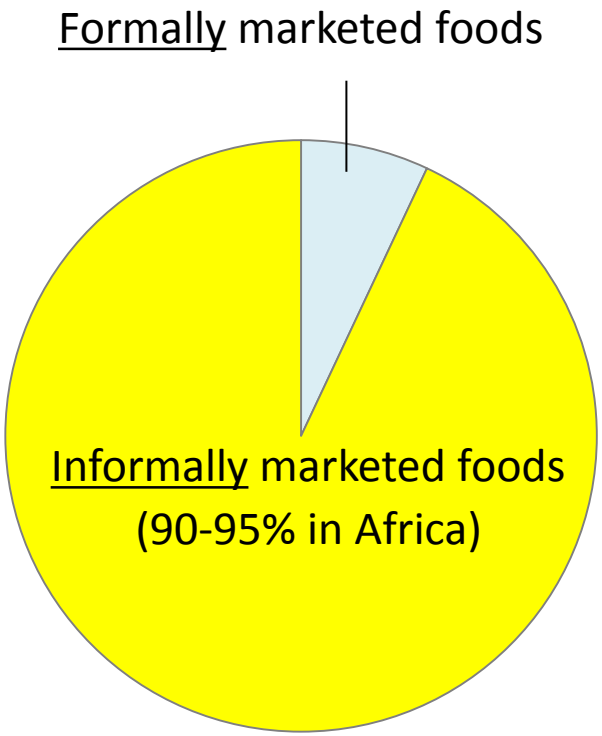
Informal ≠ Illegal

Informal market

"Absence of structured sanitary inspection"



Informally-marketed foods dominate in developing countries

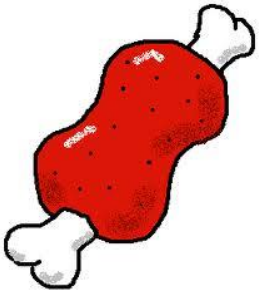


Targets of international cooperation so far

Training of public officers, infrastructure of public services

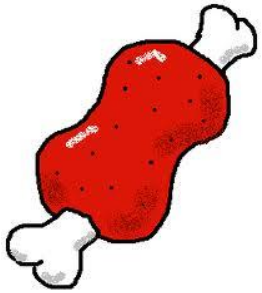
How much effective??

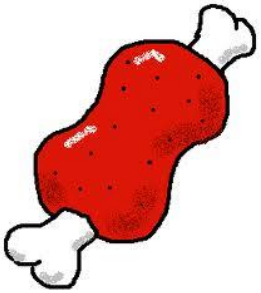
Value chain



A producer ⟶ ⟵ A consumer

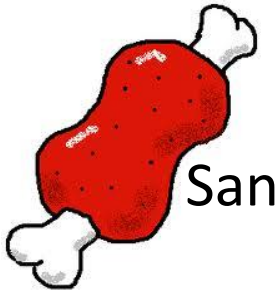
Value chain





Producers → ← Middle men → ← Consumers

Value chain



Sanitation

Sanitation

Producers → ← Middle men → ← Consumers

Safe food, fair food（BMZ, ILRI）

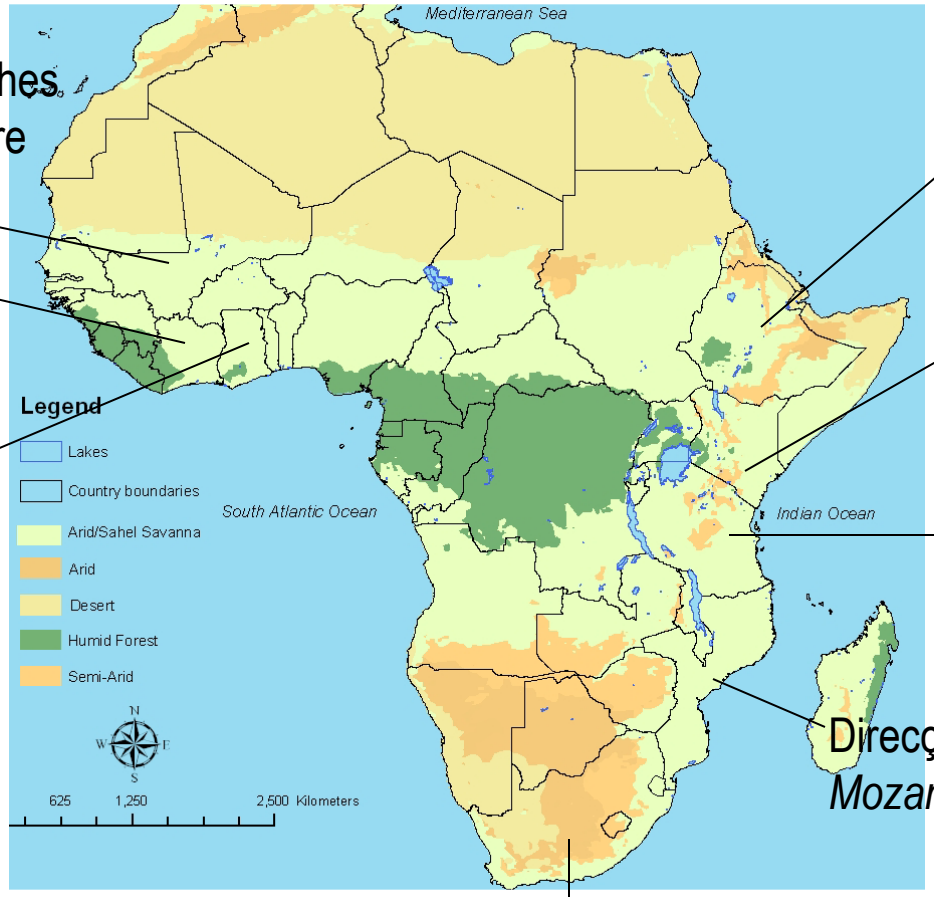
Building capacity to improve the safety of animal-source foods and ensure continued market access for poor farmers in

Sub-Saharan Africa

Partners

Centre Suisse des Recherches Scientifiques en Côte d'Ivoire
Côte d'Ivoire, Mali

University of Ghana
Ghana



Addis Ababa University
Ethiopia

Nairobi University
Kenya

Sokoine University of Agriculture
Tanzania

Direcção de Ciências Animais
Mozambique

University of Pretoria
South Africa

Codex Alimentarius Commossion

Food safety risk analysis

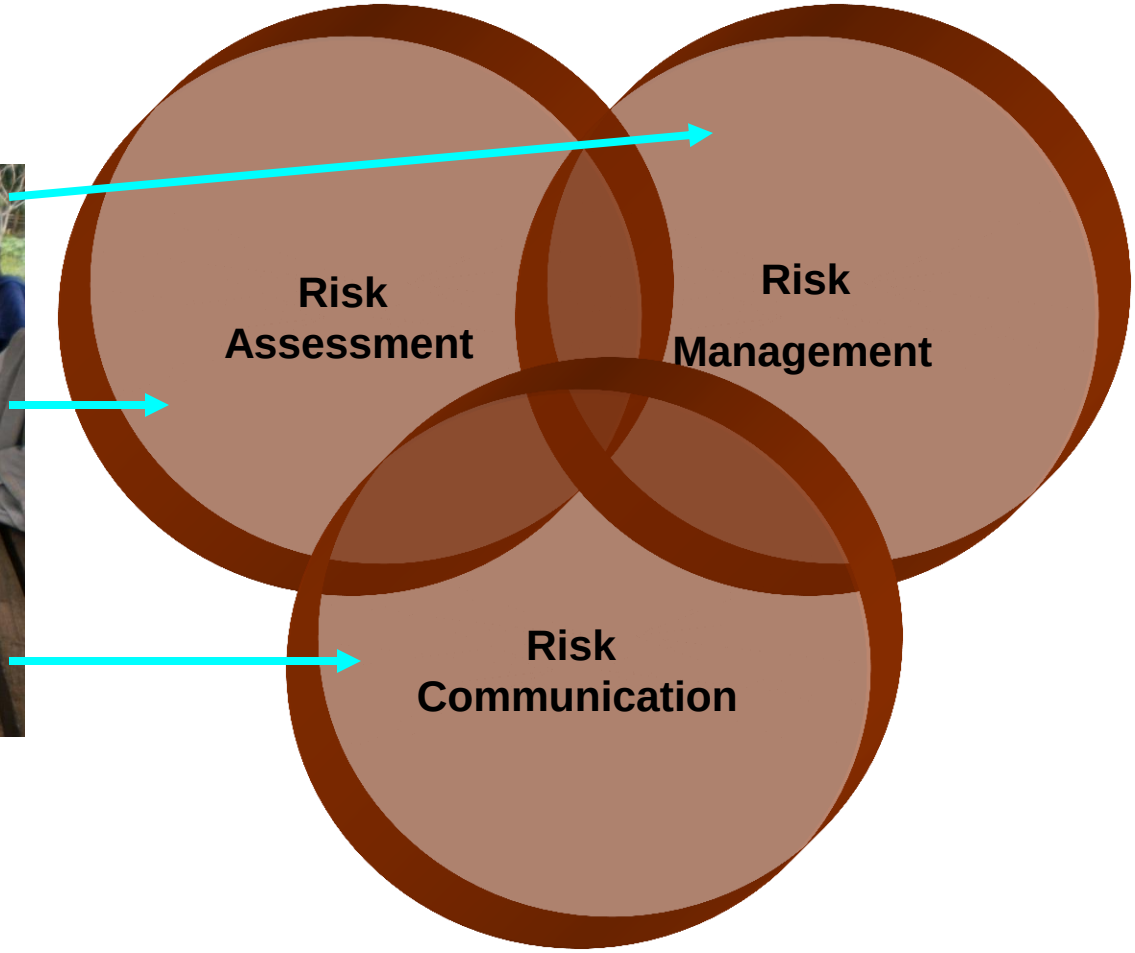
A tool for decision-making under uncertainty

*Risk is a probability of occurrence of a scenario and its size of impact (Vose, 2008)

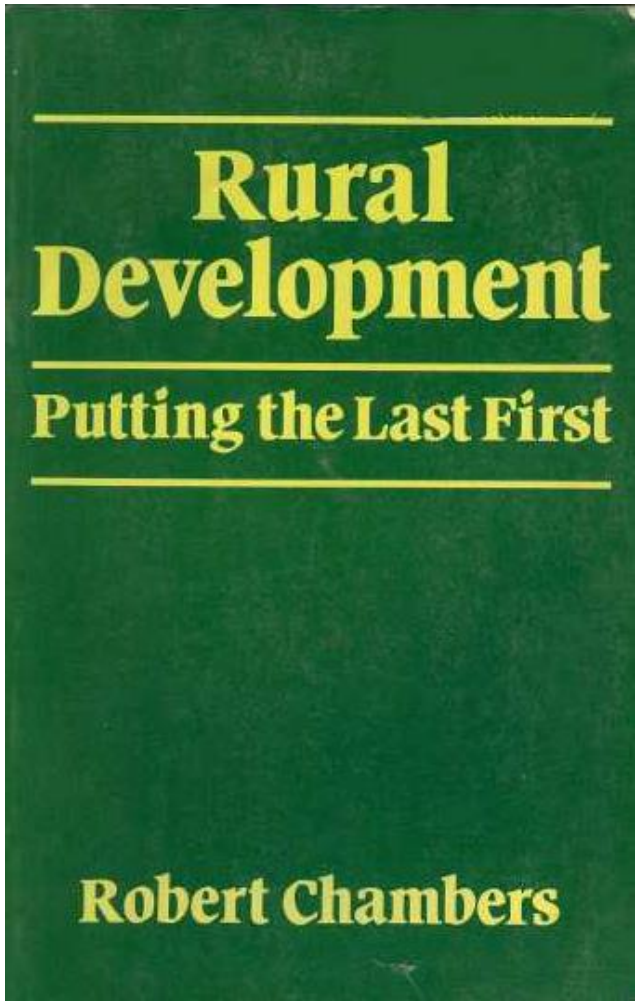
Food safety risk analysis

in informal marketing system

Participatory methods

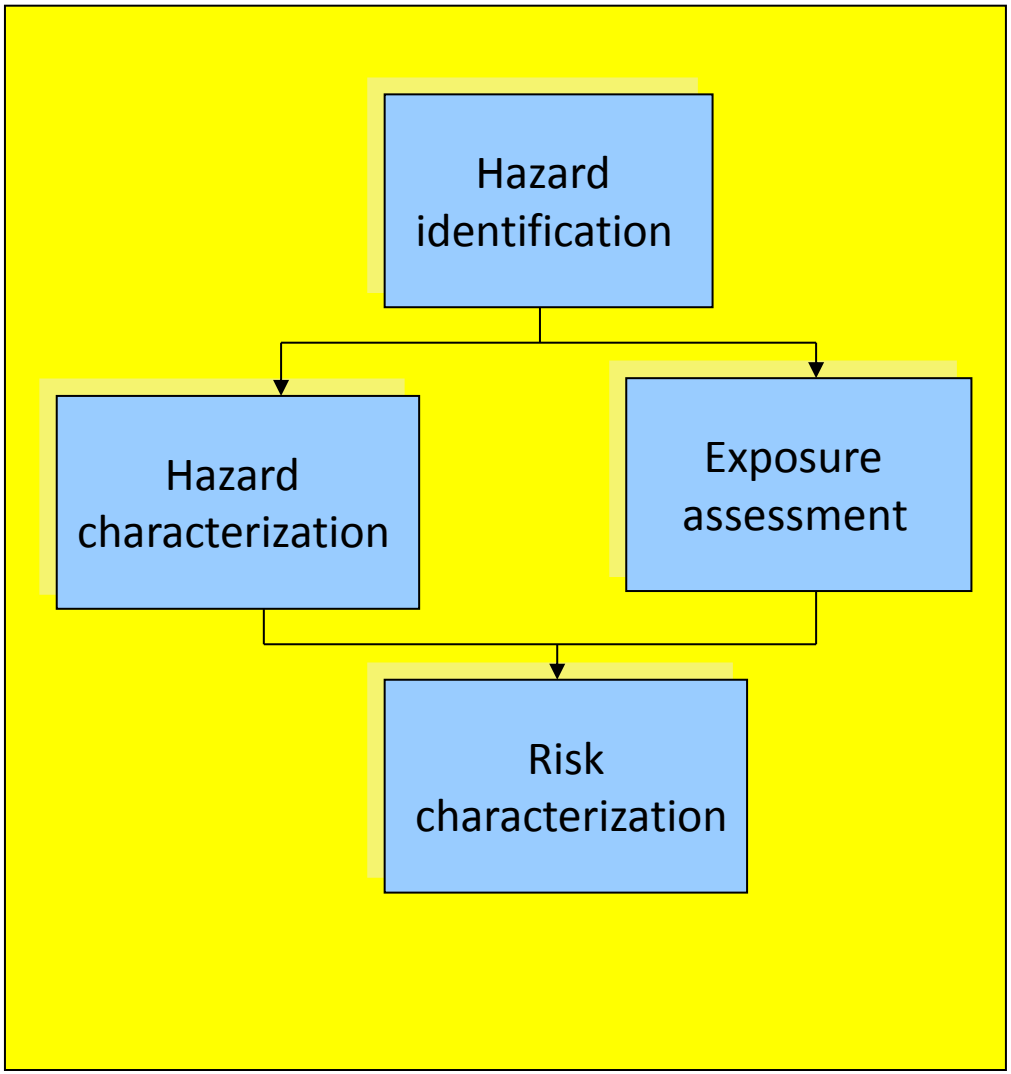


What are participatory methods?



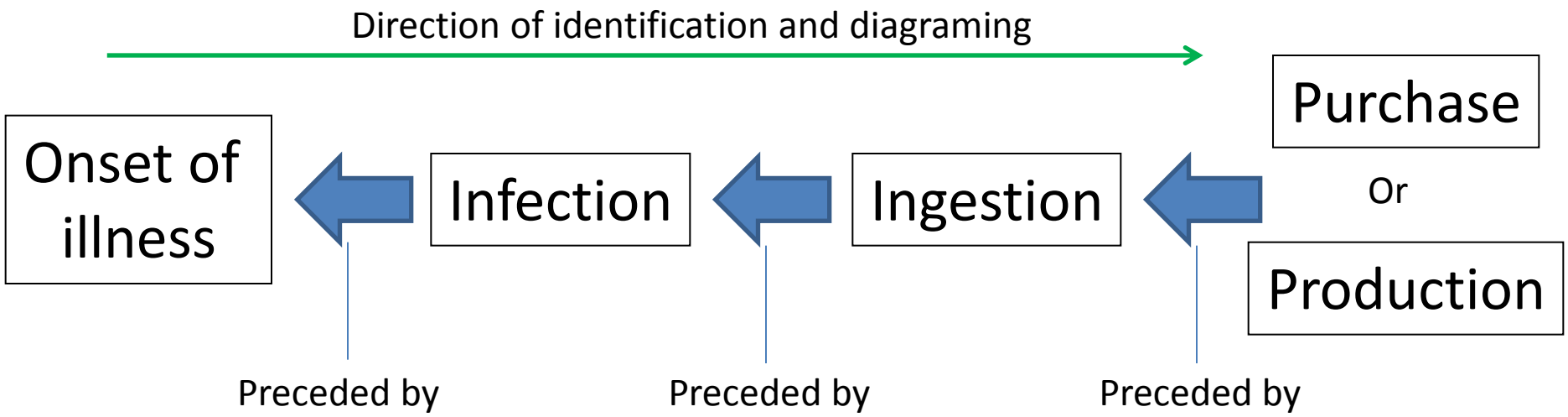
- Participants discuss problems
- Several formats:
  - Rapid rural appraisal
  - Participatory rural appraisal
  - Key-informants interview

Codex Alimentarius Commission
Risk assessment framework (CAC/GL-30 (1999))

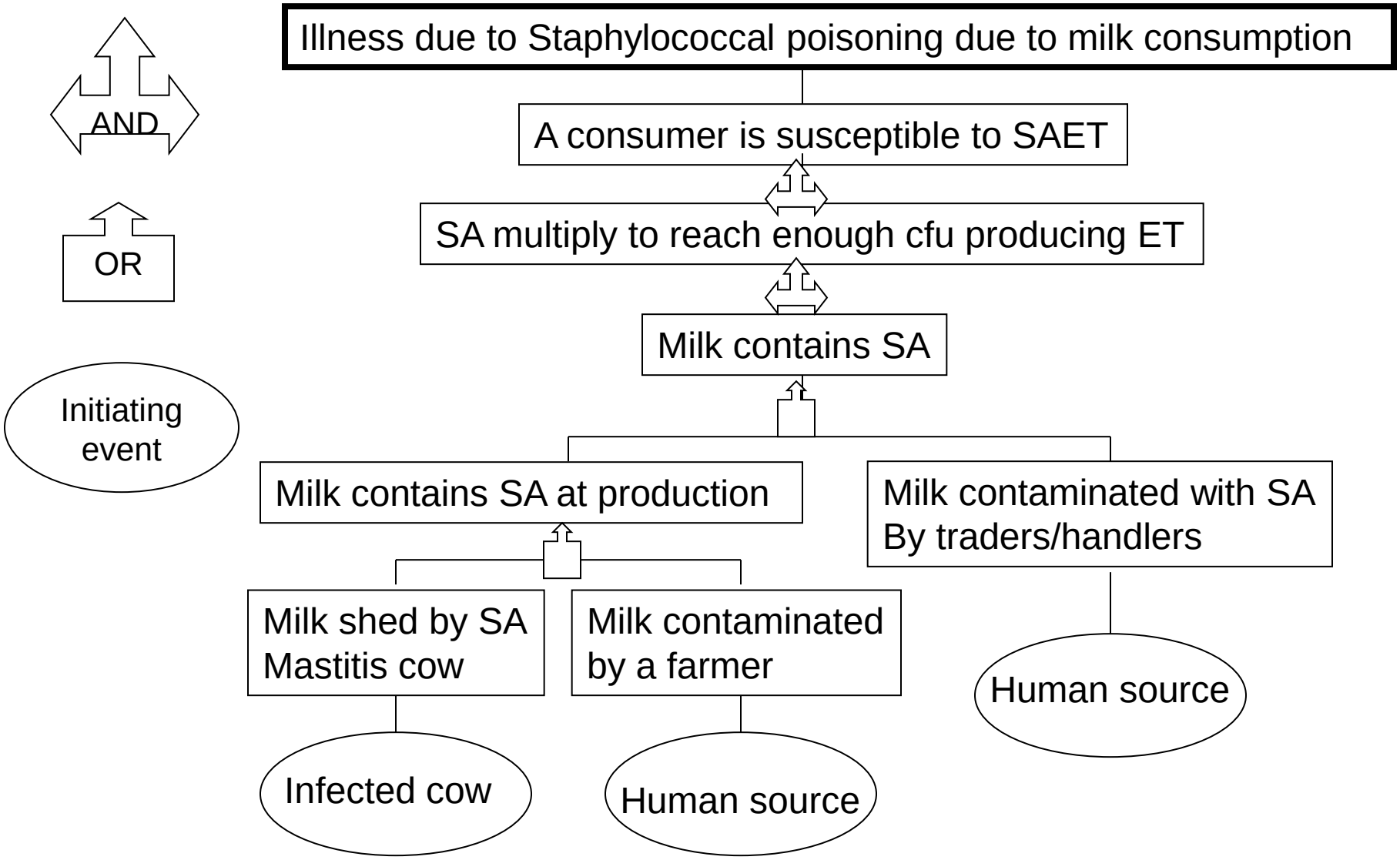


Fault tree analysis in food safety

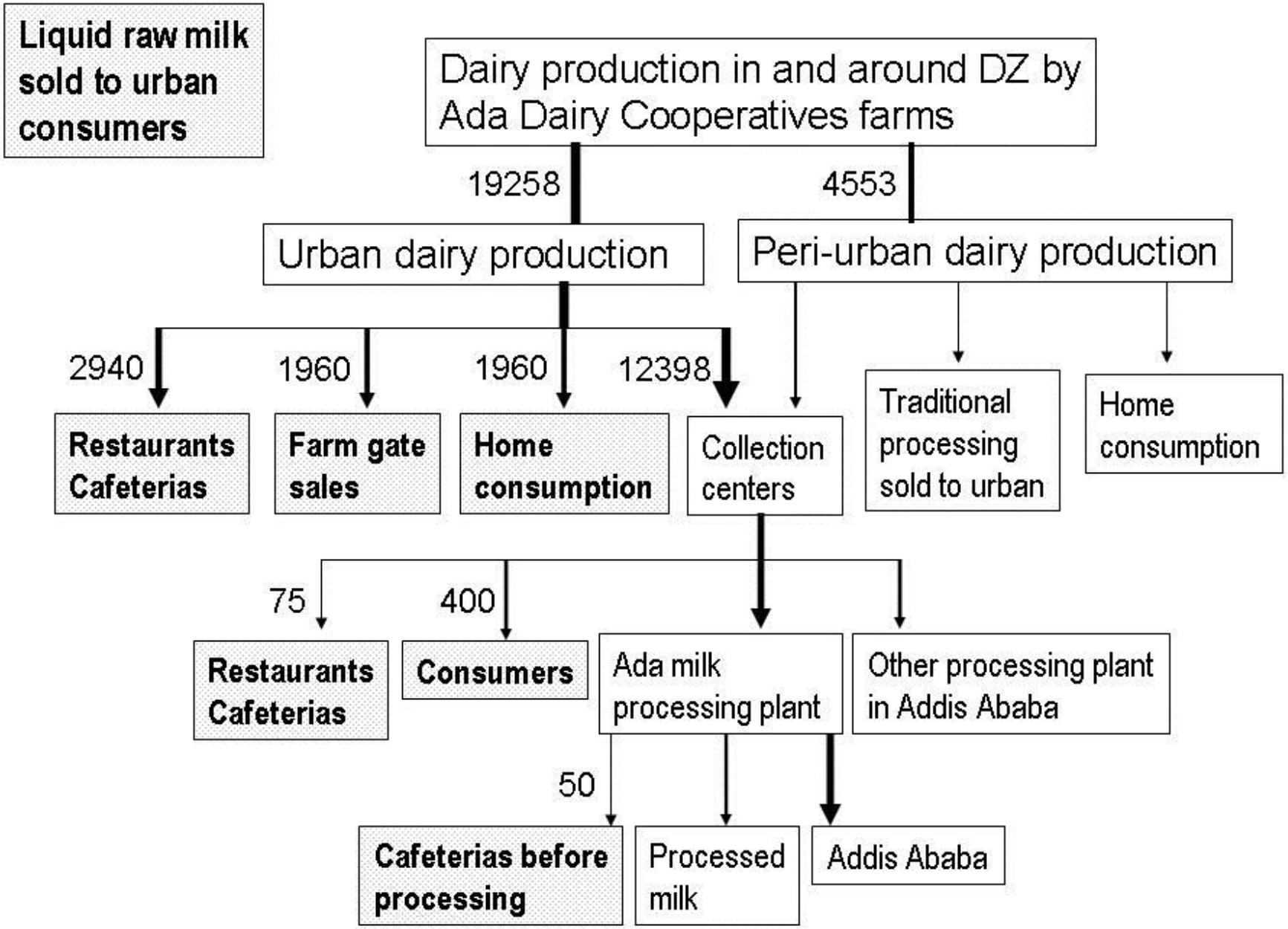
- How the illness can occur



Fault tree: understanding the logic of illness



Exposure assessment



Dairy value chain- RRA and interviews

Exposure assessment

Contamination rate - a survey

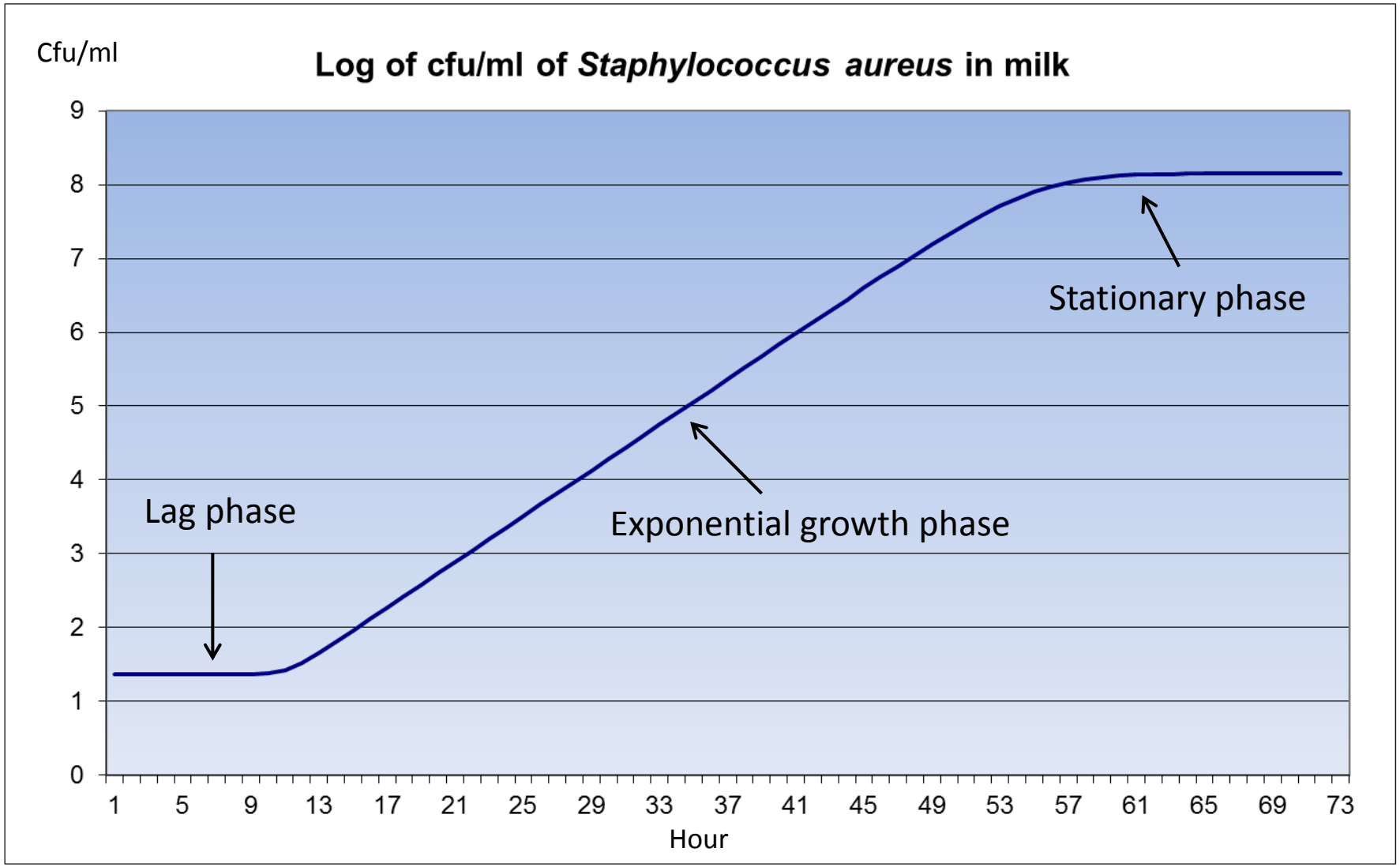
	Isolation of *S aureus*	Boiling before sales
Milk collection centre (n=25)	18 (70.4%)	0
Dairy farm (n=170)	74 (43.6%)	0

Risk mitigation by consumers -participatory and interviews

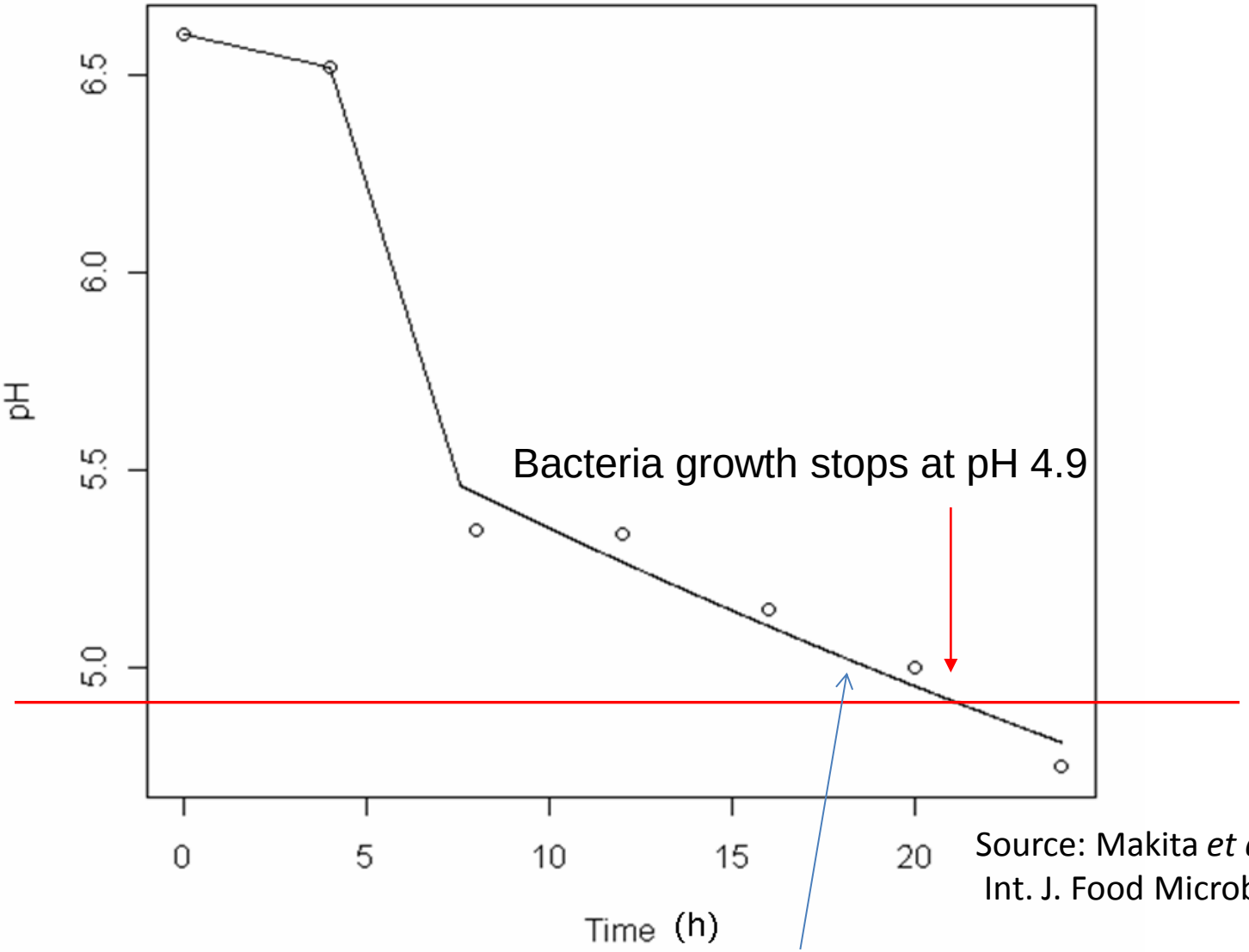
	Boil milk before consumption	Percentage
Dairy farming households (n=170)	116	68.2
Consumers (n=25)	16	64.0

Growth model:

Fujikawa and Morozumi (2006)
modified logistic model



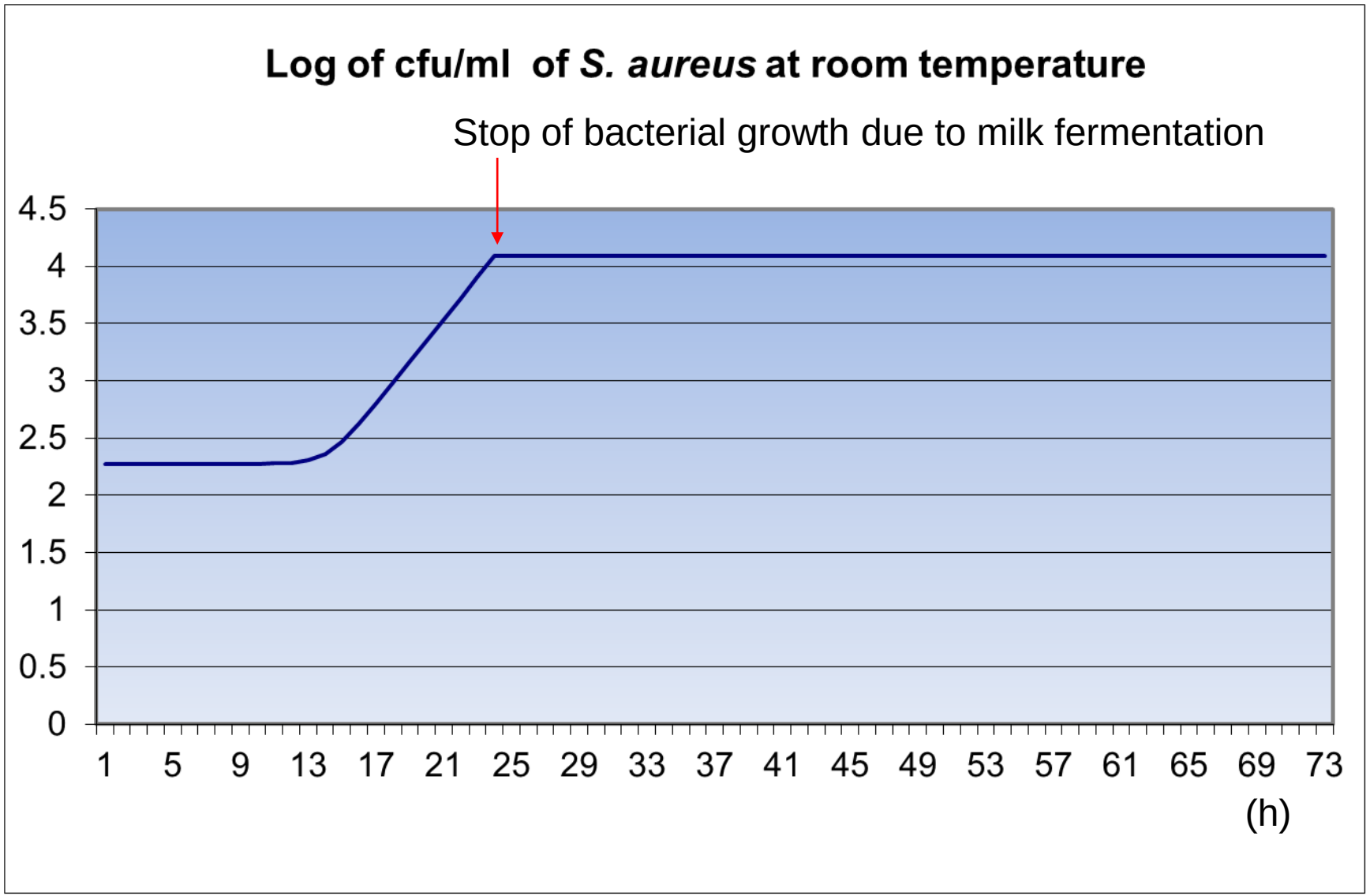
Risk mitigation by traditional milk fermentation- Modeling using reported data (Gonfa et al., 1999)



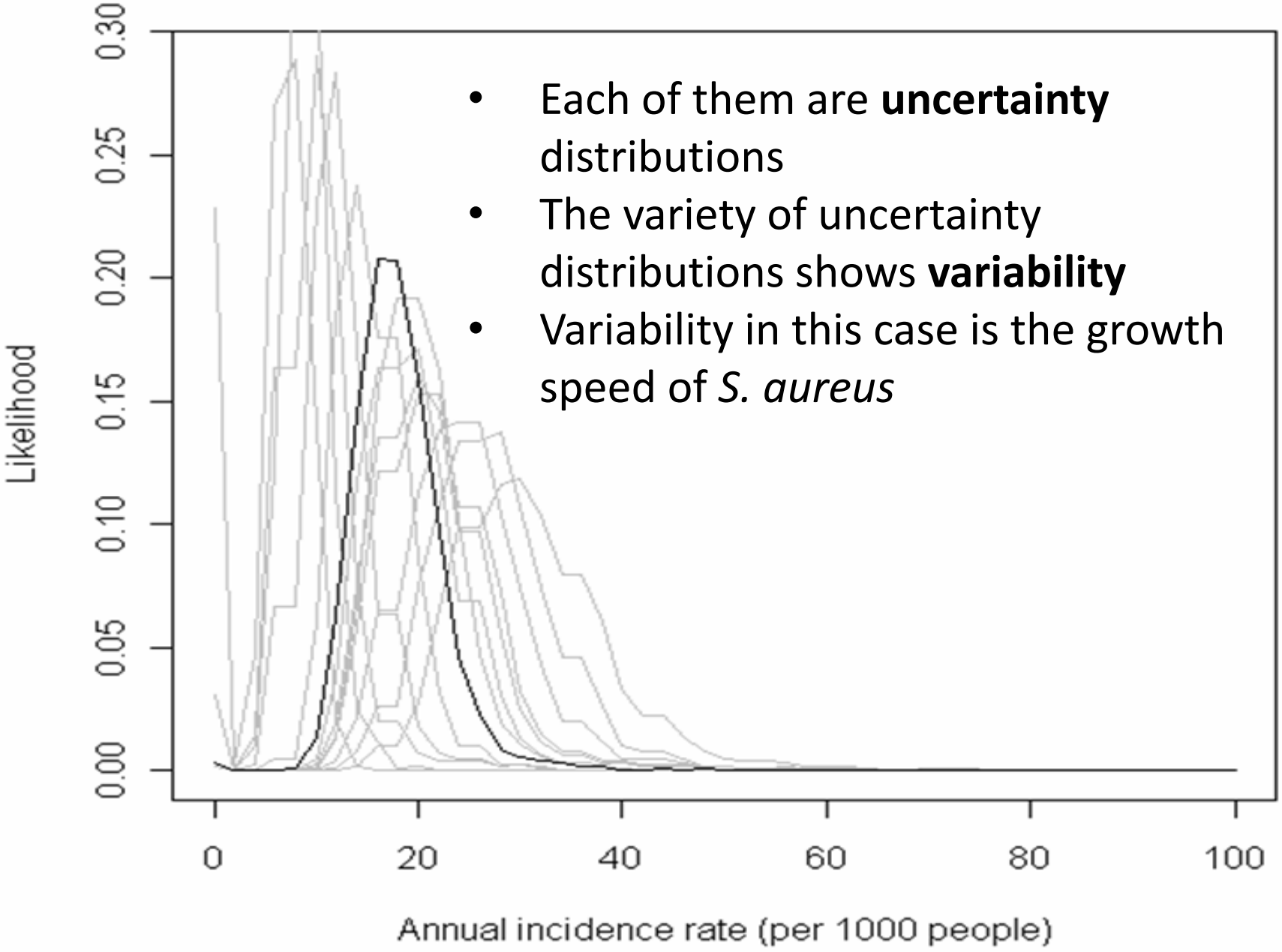
Source: Makita *et al.*, 2012 Int. J. Food Microbiol.

1/pH=0.002 t (h)+1.187 (df=3, r2=0.90, p=0.009)

Stop of growth of *S. aureus* in milk by low pH



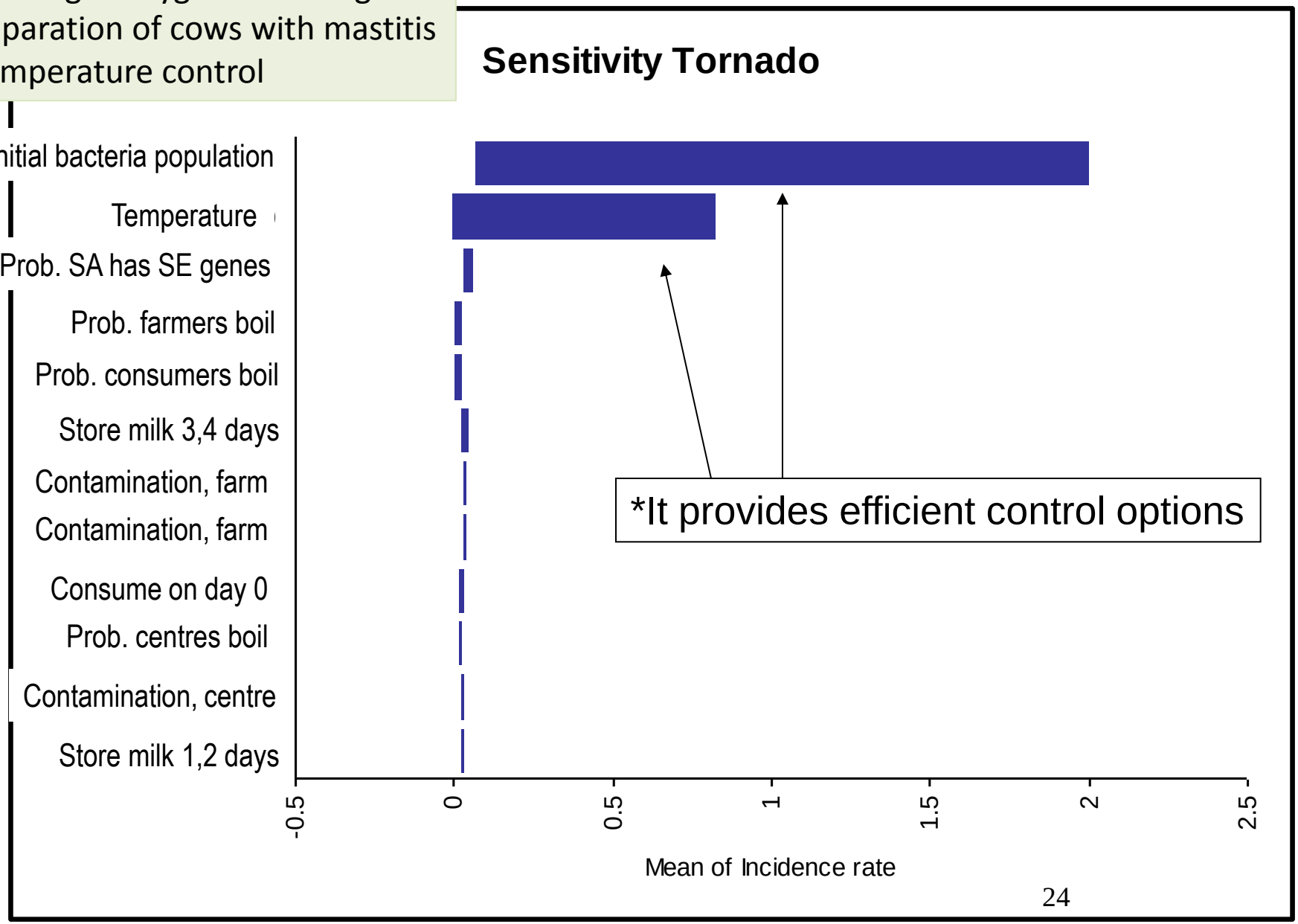
Risk characterization



- Each of them are **uncertainty** distributions
- The variety of uncertainty distributions shows **variability**
- Variability in this case is the growth speed of *S. aureus*

Sensitivity analysis

- Training for hygienic milking
- Separation of cows with mastitis
- Temperature control



Advantage of participatory risk assessment identified

-Speed

-Affordability

-Flexibility in application

-Understanding of culture

-Best control option

-Potential to change behavior

Safe food fair food

Phase II funded
(2012 -)

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http://safefoodfairfood.wordpress.com/

A4NH / AGRI-HEALTH / ANIMAL DISEASES / ANIMAL PRODUCTS / CRP37 / CRP4 / EAST AFRICA / FOOD SAFETY / FSZ / GERMANY / HEALTH (HUMAN) / ILRI / INTEGRATED SCIENCES / KNOWLEDGE AND INFORMATION / PIGS / UGANDA / ZOONOTIC DISEASES

Project partners conduct training of pig meat inspectors for safer harvesting in pig value chains in Uganda

Posted on 30 April 2014 *by* KRISTINA RÖSEL

Leave a comment

The Safe Food, Fair Food (SFFF) project is promoting food safety in informal markets through the application of risk-based approaches. In Uganda, the project is aligned with work on developing smallholder pig value chains (SPVCD). Assessments conducted in 2012-13 by the International Research Institute (ILRI) and partners showed

- More emphasis on risk management
- Egypt (fish), Uganda (pork), Tanzania (milk), Senegal, Ethiopia (small ruminants)
- Expanding in coordination with other projects…

Risk-based approach started in Asia

- ACIAR (Australia)/ILRI project in Vietnam (2013-) –

PROJECT UPDATES <aciar.gov.au>

PigRISK **empirical surveys in Hung Yen and Nghe An**

Collecting data of possible actors in pig-pork value chains through production to distribution and consumption in study sites

PigRisk project in Vietnam

- Pork – most consumed animal source-food in Vietnam
- Salmonellosis, *Streprococcus suis*, and chemical hazards
- Integration of food safety risk assessment and value chain economic assessment (incentive research)
- Veterinary, public health, and economist teams- One Health

Case study

TASKFORCE OF RISK ASSESSMENT FOR FOOD SAFETY IN VIETNAM: LINKING SCIENCE TO POLICY TO INCREASE FOOD SAFETY

ILRI

Food safety risk assessment training in Vietnam

Broad casted by ‘Voice of Vietnam’ on 2013 September 7

Đào tạo đánh giá nguy cơ an toàn thực phẩm tại các chợ

VOV.VN - Các học viên tham gia khóa học này được giới thiệu tổng quan về các bệnh liên quan đến thực phẩm.

Lần đầu tiên một khóa đào tạo đánh giá nguy cơ an toàn thực phẩm tại các chợ được tổ chức cho các chuyên gia y tế công cộng và thú y Việt Nam.

Khóa học diễn ra từ 28/6 đến 7/9 do Trung tâm Nghiên cứu Y tế Công cộng và hệ sinh thái (Trường Đại học Y tế Công cộng Hà Nội) phối hợp với Viện Chăn nuôi Quốc tế và Đại học Rakono Gakuen (Nhật Bản) tổ chức tại Hà Nội.

Các học viên tham gia lớp học (ảnh: Văn Hải)

Các học viên tham gia khóa học này được giới thiệu tổng quan về các bệnh liên quan đến thực phẩm; sự hữu ích của phương pháp phân tích nguy cơ;

LIÊN QUAN

- Kiểm tra an toàn thực phẩm Tết Trung thu tại 9 địa phương
- Tăng cường kiểm tra an toàn thực phẩm dịp Tết Trung thu
- Phụ huynh lo ngại về vệ sinh an toàn thực phẩm mùa thi
- Hà Nội xây chợ vệ sinh an toàn thực phẩm

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Thanh niên người Dao, 17 tuổi, bị bỏng điện phải cắt 2 tay!

Nhói lòng trước tình cảnh bé 20 tháng tuổi bị bỏng toàn thân

Tìm người thân

Một phụ nữ SN 1974 tìm kiếm cha mẹ người Việt Nam

Tìm mộ liệt sĩ Lê Tiến Bản

Cửa sổ tình yêu

Học cách hòa thuận với mẹ chồng

Người “trám chỗ” cho tình yêu

Take home messages

- Food safety is a big issue in developing countries
- Targeting informal markets can make huge impacts on food safety and poverty alleviation
- Participatory risk analysis is useful and effective
- Integration of incentive-based economic study can show sustainable control options for food safety

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